DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
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November 5, 2010

Kevin Golden
US EPA Region VIII
1595 Wynkoop Street
Denver, CO 80202-1129

Dear Mr. Golden:

On June 23, 2010, and September 13, 2010, on behalf of Hyperion Refining LLC (Hyperion),
RTP Environmental Associates submitted a request to extend the construction deadline in permit
condition 2.1 of Hyperion Energy Center's Prevention of Significant Deterioration (PSD) permit
#28.0701-PSD. Hyperion is evaluating its compliance with the new 1-hour Nitrogen Dioxide
National Ambient Air Quality Standard using the plume molar volume ratio method.

As noted in 40 CFR Part 51, Appendix A.1 of Appendix W, the plume molar volume ratio
method is not a regulatory default option of EPA's approved AERMOD model. 40 CFR Part 51,
Section 3.2.2(a) of Appendix W notes the following: a determination of acceptability of the
plume molar volume ratio method is the responsibility of EPA's Regional Office "or" after an
acceptable determination, the appropriate EPA Regional Office can approve the use of the plume
molar volume ratio method in the AERMOD model. The South Dakota Department of
Environment and Natural Resources is requesting EPA's concurrence that the plume molar
volume ratio method can be used to demonstrate compliance with the new 1-hour Nitrogen
Dioxide National Ambient Air Quality Standard.

Based on our previous discussions, it is my understanding that EPA has sufficient information on
several of the prerequisites noted in 40 CFR Part 51, Section 3.2.2(e) to approve the use of the
plume molar volume ratio method, such as the studies by Cole and Summerhays, 1979;
Hanrahan 1999a; Hanrahan, 1999b; and MACTEC, 2005. One of the requirements not covered
by the noted studies is the discussion on the availability and adequacy of the data bases needed to
perform the analysis. There are three unique primary sets of data needed to run the plume molar
volume ratio method: 1) Ozone data, 2) An ambient ratio, and 3) An in-stack ratio.

The ozone data to be used in the plume molar volume ratio method is obtained from the ozone
data collected by the South Dakota's Department of Environment and Natural Resources at its
monitoring stations in Sioux Falls and Union County, South Dakota. The ozone data at both

sites was collected in accordance with 40 CFR Part 58 and has been uploaded into EPA's Air Quality System.

Hyperion is modeling four separate surface meteorological data sets: 1) Calendar years 2000 through 2004 from Sioux Falls, South Dakota, 2) Calendar years 2002 through 2006 for Sioux City, Iowa 3) April 1, 2009 through March 31, 2010 for Union County augmented with corresponding Sioux Falls data, and 4) April 1, 2009 through March 31, 2010 for Union County augmented with corresponding Sioux City data. Each Surface data set was processed with corresponding upper air data from the Omaha, Nebraska upper air station.

For the Sioux Falls and Sioux City 5 year meteorological data sets, the ozone data from the Hilltop monitoring station in Sioux Falls, South Dakota for calendar years 2000 through 2006 are being used. The ozone data for Sioux Falls is being used for Sioux City because there is no ozone data available for the Sioux City area. For the Union County meteorological data sets, the corresponding ozone data from Union County, South Dakota is being used. A copy of the data is included on the enclosed CD.

Ozone values for calendar years 2002 through 2004 at the Hilltop monitoring station were only collected during the ozone season (May through October). Therefore, the corresponding hourly values for calendar years 2000, 2001, 2005, and 2006 were averaged to augment missing hourly data. In addition, where there was no data available, a default value of 0.066 parts per million was used in all three ozone data sets. The 0.066 parts per million is the maximum monitored value at the Union County monitoring site.
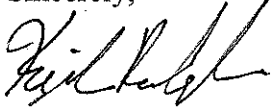
The Ambient Ratio Method specified in 40 CFR Part 51 Appendix W uses 0.75 as a default ambient ratio. This ratio was developed for an annual standard. Based on nitrogen oxide monitoring in Union County, an ambient ratio of 1.0 nitrogen dioxide to nitrogen oxides is noted for some hourly readings. Therefore, an ambient ratio of 1.0 nitrogen dioxide to nitrogen oxides will be used. A copy of the data is included on the enclosed CD.

An in-stack ratio of 1.0 nitrogen dioxide to nitrogen oxides will be used for all sources except for the diesel fired generators. For the diesel fired generators, an in-stack ratio of 0.32 nitrogen dioxide to nitrogen oxides will be used. This ratio is based in the report "Diesel Exhaust Oxidant Potential Assessed by the NO2/NO Concentration Ratio". It should be noted that this ratio is higher than the ratios being recommended by the San Joaquin Valley Air Pollution Control District in its "Assessment of Non-Regulatory Options in AERMOD Specifically OLM and PVMRM (Draft)". A copy of these documents is included on the enclosed CD.

To reiterate, the South Dakota Department of Environment and Natural Resources is requesting EPA's concurrence that the plume molar volume ratio method based on the information the department provided can be used to demonstrate compliance with the new 1-hour Nitrogen Dioxide National Ambient Air Quality Standard for Hyperion's extension request.

I would like to thank you in advance for your expedited response and concurrence of this request. If you have any questions, please feel free to contact me by phone at 605-773-3151.

Sincerely,

Kyrik Rombough
Natural Resources Engineering Director
Air Quality Program

Enclosure: